# Finding of No Significant Impact Environmental Assessment

Final Draft

**Bagrami Industrial Park** 

Kabul Province Afghanistan

# FINDING OF NO SIGNIFICANT IMPACT

# Bagrami Industrial Park Kabul Province, Afghanistan

#### The Proposed Action and Need

This Environmental Assessment (EA) addresses a proposal to prepare the site of the Bagrami Industrial Park in Kabul Province, Afghanistan. This site is roughly 7.5 kilometers from Kabul and 3 kilometers from the village of Bagrami. The Government of Afghanistan owns this site, which occupies roughly 9 hectares. The proposed project includes site preparation and installation of critical infrastructure. This Finding of No Significant Impact incorporates the EA by reference. A copy of the EA is attached.

Since 2002, the United States of America, through entities such as the U.S. Agency for International Development (USAID), has been working to ensure the economic recovery and political stability in Afghanistan. Activities include projects designed to stimulate economic growth, repair key infrastructure and institutional strengthening of public services.

The proposed site preparation for the Bagrami Industrial Park is sponsored by USAID's Sustainable Economic Policy and Institutional Reform Support (SEPIRS) Program. The Strategic Objective Number is SO 306-003.02. USAID is committed to undertaking activities that are both economically sustainable and protective of the environment. The strategic objective of this proposed project is infrastructure development, economic governance and humanitarian assistance. The budget for this project is roughly \$3.3 million and should be completed in 2 years. This document provides stakeholders, including host country decision-makers, with a full discussion of environmental effects of the proposed action.

Kabul Province and the surrounding area suffer from sluggish economy. The development of this industrial park will stimulate the area's economic growth. This project will involve preparing the site for future tenants. Site preparation will include the design and installation of critical infrastructure, which will address water and wastewater, energy and transportation issues. The project is subject to limitation that the site be used for industrial development purposes in order to further economic growth in this area. The land affected by the proposed project is not needed by other government entities and will contribute to goals for targeted, sustainable growth in the region.

# **Alternatives**

Three alternative actions have been considered.

Alternative 1, No Action--Under this alternative, the site would remain in its current state. While this alternative would ensure the short-term continuation of

the existing environmental conditions of the site, it would preclude any immediate opportunity for economic development. By not proceeding with this project, the area's economy would remain unchanged. Without the availability of this site, the development of an industrial park would require the evaluation of other sites, including currently undeveloped or greenfield sites.

Alternative 2 - Sell the Land to Industrial Users on an As-Needed Basis--Under this alternative, the Government of Afghanistan would retain this land until such time as industries desiring to locate on the site have been identified by a local, development board or through self-identification. This alternative, while allowing more direct control over the specific industries locating on the site, could result in piecemeal development inconsistent with a coherent industrial development strategy. From an environmental standpoint, the impact of selection of this alternative would be similar in kind and degree to the proposed course of action (i.e., Alternative 3), but the quality of the overall development might be impaired because the site would be developed on a piecemeal basis.

This alternative would require a much greater level of resources for monitoring and administrative costs of transferring many individual tracts of land instead of handling one large transfer. This alternative would restrict the opportunity for self-direction by the local community.

Alternative 3, Prepare the Site as a Whole, the Preferred Alternative--Of the alternatives considered, this alternative would provide the best overall balance between development and environmental protection. By restricting development by way of protective covenants, environmental quality would be maintained. Development standards developed and implemented by Afghanistan's Industrial Parks Development Authority (IPDA) would assure a properly planned, quality industrial park. This alternative would yield the best economic benefits and a better potential for community-based and directed development. This alternative provides the community with more autonomy, restricted by guidelines and commitments developed through the National Environmental Policy Act (NEPA) process. This alternative requires less staff and budgetary resources for implementation and ensures a more even partnership.

Alternative 3 has been chosen as the preferred alternative. It has been determined that Alternative 3 would have no significant impacts on the quality of the environment, and it provides the best economic benefits to the communities while requiring fewer resources. The mitigation described below would minimize impacts on the environment from implementing this alternative.

The possibility of using alternative locations was considered. The site under consideration is surrounded by a textile mill on one side and a bottling plant on the other side. Existing roads and the water pipeline minimize the need for infrastructure development. Other sites would require infrastructure work, with potentially significant environmental impacts. Further, selecting a greenfield site

would not be protective of the environment. Therefore, different sites were dropped from further consideration.

# **Impact Assessment**

An interdisciplinary team reviewed the potential direct, indirect and cumulative effects of the development and operation of the proposed industrial park. The attached EA examines the following resources.

- Air Quality;
- Groundwater;
- Surface Water Quality;
- Floodplains;
- Terrestrial Ecology;
- Aquatic Ecology;
- Sensitive Aquatic Animals;
- Terrestrial Threatened and Endangered Species;
- Wetlands:
- Socioeconomics;
- Transportation;
- Prime Farmland:
- Visual Quality;
- Managed Areas and Recreation;
- Cultural Resources:
- Noise:
- Solid and Hazardous and Special Wastes;
- Seismic Considerations: and
- Landslides.

There are no potentially significant Impacts to the above resources. Thus, no special mitigation measures are necessary. The commitments identified in the following section will ensure that the proposed action will mitigate any potential concerns.

#### Mitigation

The following environmental commitments have been identified for the preferred alternative (Alternative 3). These environmental and resource protection criteria would be included in the land transfer deed as real covenants that attach to and run with the land and will be binding on any party who may hereafter come into ownership or possession of the land. Adherence to these commitments during construction and operation of the proposed industrial site and associated water and sewer management would minimize the potential for environmental impacts.

The following uses will be permitted on the proposed site.

- 1. Light and medium manufacturing, assembling, and warehousing for distribution purposes.
- 2. Transportation and service facilities.
- 3. Retail sale of food, beverage, and other such convenience items to persons employed on the property, as long as these items are not offered for sale to the general public.
- 4. Temporary structures necessary and incidental to any construction activity.
- 5. Utility facilities necessary for the provision of public services and pollution control facilities associated with site use.
- 6. Other industrial uses not listed above, subject to prior review and approval.

# The following uses are expressly prohibited.

- 1. Temporary or permanent residential use.
- 2. Retail sale of products not manufactured or handled at wholesale by the owner or lessee.
- 3. Wreck, junk, or commercial waste processing; salvage yards; or similar activities (except as incidental and integral to permitted uses).
- 4. Any other purpose other than such as may be expressly approved by IPDA.

The exteriors of buildings to be located in the park shall incorporate structural arrangements and color schemes that will limit visual discord with the natural background.

Nighttime lighting for the industrial park and buildings located in it shall incorporate features for limiting the increase in brightness of the nighttime sky.

The front, rear, and sides of all buildings shall be visually screened from adjacent parcels and offsite property, using methods such as architectural fencing, berms, and plantings, individually or in combination.

Noise levels in areas of the industrial park used for office buildings shall not exceed 75 dBA, and in areas to be used for wholesale, industrial, manufacturing, and utilities shall not exceed 80 dBA. Further, noise generated in the industrial park shall not exceed 65dBA at any existing residence.

Regulatory requirements would apply and routine Best Management Practices for controlling sedimentation and erosion would be utilized.

In addition, should there be any inadvertent archaeological discoveries within the proposed site during the construction of the proposed industrial park, the IPDA

shall adopt appropriate measures to identify, evaluate, and treat these discoveries.

All construction in the proposed industrial park will comply with the seismic load design of the 2003 edition of the International Building Code (IBC). This is consistent with USAID requirements, which call on all designs developed in the Kabul region to meet the region 4 seismic standards. In addition, landslide protection will be addressed through sound site development.

# Intergovernmental Review

This project is a collaborative effort between several ministries in the Afghan government, including the following:

- Ministry of Light Industries (MOLI);
- Ministry of Commerce;
- Ministry of Finance;
- Ministry of Foreign Affairs; and
- Ministry of Electricity and Water.

# **Conclusion and Finding**

Based on the findings in the EA, including implementation of required mitigation, we conclude that the proposed action is not a major action significantly affecting the quality of the environment. Accordingly, an environmental impact statement is not required.

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# **Environmental Assessment**

# Final Draft

# **Bagrami Industrial Park**

Kabul Province Afghanistan

November 22, 2004

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# 1.0 PURPOSE AND NEED FOR PROPOSED ACTION

#### 1.1 Introduction

Since 2002, the United States of America, through entities such as the U.S. Agency for International Development (USAID), has been working to ensure the economic recovery and political stability in Afghanistan. Activities include projects designed to stimulate economic growth, repair key infrastructure and institutional strengthening of public services.

The proposed site preparation for the Bagrami Industrial Park is sponsored by USAID's Sustainable Economic Policy and Institutional Reform Support (SEPIRS) Program. The Strategic Objective Number is SO 306-003.02. USAID is committed to undertaking activities that are both economically sustainable and protective of the environment. The strategic objective of this proposed project is infrastructure development, economic governance and humanitarian assistance. The budget for this project is roughly \$3.3 million and should be completed in 2 years. This document provides stakeholders, including host country decision-makers, with a full discussion of environmental effects of the proposed action.

This proposed action focuses on stimulating economic growth in Kabul Province. The project will include the design and construction of key infrastructure, including roads needed to move goods and services quickly and cost effectively between the Bagrami Industrial Park and major population centers. Other activities include development of a potable water system and wastewater management system, construction of a solid waste collection and disposal facility, and installation of an energy infrastructure.

# 1.2 The Proposed Action

The Government of Afghanistan proposes to prepare a site in Kabul Province, Afghanistan, for the Bagrami Industrial Park. The Afghan Government owns the site, which occupies roughly 9 hectares. The site is located approximately 7.5 kilometers from Kabul and 3 kilometers from the village of Bagrami. The proposed project includes site preparation and installation of critical infrastructure.

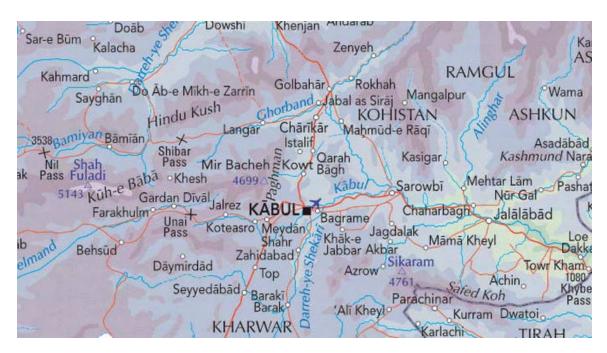


Figure 1 is a map of the Kabul area showing the proposed Bagrami Industrial Park.



Figure 2 provides an aerial photograph of the site.

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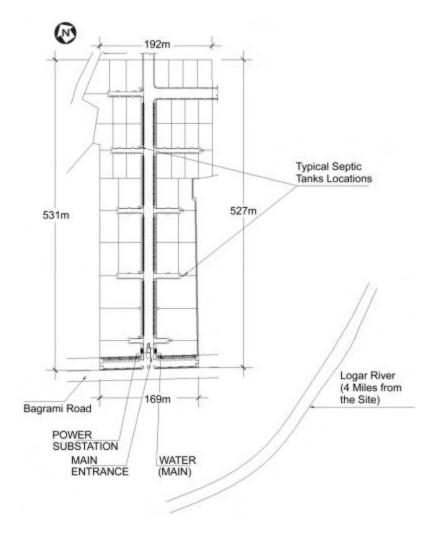


Figure 3 is a schematic of the proposed Bagrami Industrial Park.

Kabul Province suffers from a sluggish economy. The development of this industrial park will stimulate the area's economic growth. This project will involve preparing the site for future tenants. Site preparation will include the design and installation of critical infrastructure, which will address water and wastewater, energy and transportation issues.

The project would be subject to limitation that the site be used for industrial development purposes to further economic growth in Kabul Province. It has been determined that the land in the proposed site is not needed to carry out any plans and programs by local authorities. The proposed action would contribute to goals for targeted, sustainable growth in the region.

Figure 1 is an aerial photograph of the project site. Figure 2 is a schematic illustrating how the site might be developed.

Alternatives are: (1) to retain the land in its current state, that is, No Action; (2) to develop the land on an as-needed basis; and (3) to prepare the site as a whole for industrial development. Site preparation will include designing and implementing all utilities including gas, electricity, water, and sewer.

# 1.3 Organization of this Environmental Assessment

This EA is organized as follows:

- Chapter 1 discusses the purpose and need for the proposed action;
- Chapter 2 describes the proposed action and the alternatives analyzed in this EA;
- Chapter 3 provides an overview of the existing environmental conditions of the potentially affected environments;
- Chapter 4 describes commitments to minimize adverse impacts of the proposed action;
- Chapter 5 presents the list of agencies and persons consulted;
- Chapter 6 is the list of preparers; and
- Chapter 7 provides supporting information, including sources of information and a list of acronyms.

# 2.0 ALTERNATIVES

The following three alternatives were considered:

- No action, that is, to retain the land in its current state;
- to develop the land on an as-needed basis; and
- to prepare the site as a whole for industrial development.

#### 2.1 Alternative 1 - No Action

Under this alternative, the site would remain in its current state. While this alternative would ensure the short-term continuation of the existing environmental conditions of the site, it would preclude any immediate opportunity for economic development. By not proceeding with this project, the area's economy would remain unchanged. Without the availability of this site, the development of an industrial park would require the evaluation of other sites, including currently undeveloped or greenfield sites.

# 2.2 Alternative 2 – Develop the Site on an As-Needed Basis

Under this alternative, the Government of Afghanistan would retain this land until such time as industries desiring to locate on the site have been identified by a local, development board or through self-identification. This alternative, while allowing more direct control over the specific industries locating on the site, could result in piecemeal development inconsistent with a coherent industrial development strategy. From an environmental standpoint, the impact of selection of this alternative would be similar in kind and degree to the proposed course of action (i.e., Alternative 3), but the quality of the overall development might be impaired because the site would be developed on a piecemeal basis.

This alternative would require a much greater resources for monitoring and administrative costs of transferring many individual tracts of land instead of handling one large transfer. This alternative would restrict the opportunity for self-direction by the local community.

# 2.3 Alternative 3 – Prepare the Site as a Whole, the Preferred Alternative

Of the alternatives considered, this alternative would provide the best overall balance between development and environmental protection. By restricting development by way of protective covenants, environmental quality would be maintained. Development standards developed and implemented by the Government of Afghanistan's Industrial Parks Development Authority (IPDA) would assure a properly planned, quality industrial park. This alternative would yield the best economic benefits and a better potential for community-based and directed development. This alternative provides the community with more

autonomy, with restrictions limited to guidelines and commitments developed through the National Environmental Policy Act (NEPA) process. This alternative requires less staff and budgetary resources for implementation and ensures a more even partnership.

Alternative 3 is the preferred alternative. This alternative provides the best economic benefits to the communities while requiring fewer resources. The mitigation described below would minimize impacts on the environment from implementing this alternative.

# 2.3.1 Future Review and Approval

Under Alternative 3, proposed activities would be coordinated with IPDA for determination of conformity with the provisions of this EA. Projects conforming to the provisions in Sections 2.3.2 and 2.3.3 are considered to be within the scope of this document and would be approved without further review. IPDA would conduct further environmental review of industrial projects that do not conform before making a decision on their approval. This future review and approval would be based on three levels of potential impact:

- Commercial operations and light manufacturing with little potential to have environmental impacts.
- Projects with greater potential to have impacts would receive review at appropriate levels to ensure that their potential impacts have been adequately covered by this EA. Projects that fall within the industrial development guidelines listed below are expected to be eligible for categorical exclusion from additional review.
- Industrial operations with greater potential for impacts would receive review at the EA to EIS levels. Examples include those which handle large amounts of hazardous materials, emit large amounts of air contaminants, need an individual wastewater discharge to local streams, or wish to construct waterfront facilities.

The impacts of activities identified in these levels will ensure that site preparation and expansion are integrated with environmental protection objectives, allowing for an orderly approach to development.

#### 2.3.2 Permitted and Prohibited Uses for Alternative 3

The following uses will be permitted on the proposed site.

- 1. Light and medium manufacturing, assembling, and warehousing for distribution purposes.
- 2. Transportation and service facilities.

- 3. Retail sale of food, beverage, and other such convenience items to persons employed on the property, as long as these items are not offered for sale to the general public.
- 4. Temporary structures necessary and incidental to any construction activity.
- 5. Utility facilities necessary for the provision of public services and pollution control facilities associated with site use.
- 6. Other industrial uses not listed above, subject to prior review and approval.

The following uses are expressly prohibited:

- 1. Temporary or permanent residential use.
- 2. Retail sale of products not manufactured or handled at wholesale by the owner or lessee.
- 3. Wreck, junk, or commercial waste processing; salvage yards; or similar activities (except as incidental and integral to permitted uses).
- 4. Any other purpose other than such as may be expressly approved by IPDA.

The exteriors of buildings to be located in the park shall incorporate structural arrangements and color schemes that will limit visual discord with the natural background.

Nighttime lighting for the industrial park and buildings located in it shall incorporate features for limiting the increase in brightness of the nighttime sky.

The front, rear, and sides of all buildings shall be visually screened from adjacent parcels and offsite property, using methods such as architectural fencing, berms, and plantings, individually or in combination.

Noise levels in areas of the industrial park used for office buildings shall not exceed 75 dB, and in areas to be used for wholesale, industrial, manufacturing, and utilities shall not exceed 80 dB. Further, noise generated in the industrial park shall not exceed 65dB at any existing residence.

In addition, the following general requirements shall apply:

- Should there be any inadvertent archaeological discoveries within the proposed site during the construction of the proposed Industrial Park, IPDA shall determine appropriate measures to identify, evaluate, and treat these discoveries.
- All land disturbances shall be conducted using best management practices to control erosion and sedimentation.

All construction in the proposed industrial park will comply with the seismic load design of the 2003 edition of the International Building Code (IBC). This is consistent with USAID requirements, which call upon all building designs in the Kabul region to meet the region 4 seismic standards. In addition, landslide protection will be addressed through sound site development. In addition, landslide protection will be addressed through sound site development.

#### 2.3.3 Water and Sewer Needs for Alternative 3

On-site wells will not be used to provide potable water. Water for the Bagrami Industrial Park will be provided by tapping into an existing pipeline that brings water from wells that feed from the Logar River Aquifer. These wells are roughly 6.5 kilometers away from the site. This existing pipeline is underground and passes by the entrance to the Bagrami Industrial Park. The pipeline was originally built to service a textile plant that is no longer in operation.

A septic system will be provided to accommodate the sanitary needs of site occupants. Industrial wastes generated by park tenants will be considered on a case-by-case basis by IPDA. Industrial wastes will be regulated and addressed by IPDA and the Afghan Investment Support Agency.

#### 2.4 Alternative Locations

The prospect of alternative locations was considered. The site under consideration is surrounded by a textile mill on one side and a bottling plant on the other side. Existing roads and the water pipeline minimize the need for infrastructure development. Other sites would require infrastructure work, with potentially significant environmental impacts. Further, selecting a greenfield site would not be protective of the environment. Therefore, different sites were dropped from further consideration.

# 2.5 Comparison of Alternatives and the Preferred Alternative

Alternative 1, the No Action Alternative, leaves the site in its current state. While this alternative would ensure the short-term continuation of the existing environmental conditions of the site, it would preclude any immediate opportunity for economic development.

Alternative 2, sale of land to industrial users on an as-needed basis, would allow greater control over specific industries, which would locate at the site. On the other hand, this alternative would result in case-by-case development decisions that may ultimately be inconsistent with the industrial development plan of the Province. Alternative 2 would require a much greater commitment of management resources to recruit individual industries and transfer many individual tracts of land instead of handling one large transaction.

Alternative 2 would limit the ability of the local communities to plan and direct development in their area. Environmentally, Alternative 2 would be similar to Alternative 3, but the quality of the overall development might be impaired because the site would be developed without the benefits of an overall site development plan.

Alternative 3, the Preferred Alternative, would allow planned, coordinated development of the site.

Analyses in this EA are based on the assumption that all land would be disturbed under either Alternative 2 or 3. The site has been carefully screened to identify sensitive resources. Land areas containing sensitive resources will be excluded from development activities. Commitments listed in Chapter 4 would limit all impacts to insignificant levels. Socioeconomic impacts for either Alternative 2 or 3 would be positive.

# 3.0 THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION

The following environmental issues pertinent to the proposed action and the comparison of alternatives were identified and are addressed in this EA.

- Air Quality
- Groundwater
- Surface Water Quality
- Floodplains
- Terrestrial Ecology
- Aquatic Ecology
- Sensitive Aquatic Animals
- Terrestrial Threatened and Endangered Species
- Wetlands
- Socioeconomic
- Transportation
- Prime Farmland
- Visual Quality
- Managed Areas and Recreation
- Cultural Resources
- Noise
- Solid and Hazardous and Special Wastes
- Seismic Considerations
- Landslides

Under the Interim Administration, an authority for environmental management was mandated. The Ministry of Irrigation and Water Resources was allocated the additional responsibility for environmental management and renamed as the Ministry of Irrigation, Water Resources and Environment (MIWRE).

The mandate of the new ministry covers watershed management, including the maintenance, design and construction of water intakes, irrigation canals, and reservoirs as well as the ecological condition of catchments. MIWRE is responsible for environmental management and environmental degradation.

When MIWRE was established, Afghanistan's environmental priorities had not been elaborated or prioritized, and the ministry operated largely without any policy guidance. Its current vision for environmental management reflects a traditional, sectoral approach. With roughly 700 staff members, the ministry is divided into individual units covering sanitation, hazardous waste, industry, agriculture, pollution, emergencies and disasters, and international relations. The operational plan divides the country into the five major water basins, with the Department of Irrigation representing MIWRE at the provincial and district levels.

The ministry has one minister, two deputy ministers, and twelve directorates general. The technical deputy minister is responsible for the planning and implementation of irrigation and water resources programs. The administrative deputy minister is responsible for the operational side of management, such as contracts, staffing and maintenance of buildings. The twelve directorates general are organized along functional responsibilities.

A Department of Environment has been created, but it does not at present have dedicated staff to work specifically on environmental management issues. Rather, the staff consists mainly of technical water and irrigation experts, consultants and engineers. Currently, the core environmental staff in the Department of Environment is composed of the minister, the deputy minister responsible for environmental affairs and the director of planning. The United Nations Environmental Programme and other UN agencies are currently providing capacity building and technical assistance to the ministry.

The Government of Afghanistan has an existing agency, the Industrial Parks Development Authority (IPDA), that is responsible for developing and implementing all regulations, standards, and rules that govern this and other industrial park projects.

# 3.1 Air Quality

In Afghanistan's urban areas, vehicle emissions and dust are the main factors negatively affecting air quality. During late autumn and winter, air quality deteriorates further by domestic emissions arising from increased use of ovens, stoves and open fires. Air pollution can result in serious public health effects, including heart and respiratory disease, increased likelihood of premature death, increased asthma rates in children, and death. The most apparent affect, however, is the urban haze that clouds many cities.

#### 3.1.1 Affected Environment

The Bagrami Industrial Park site is located roughly 7.5 kilometers from Kabul, in Kabul Province. A recent article highlighted some of the growing air pollution problems affecting Afghanistan (Saba, D., April 2004). Air quality management activities are included the Asian Development Bank's country program for Afghanistan. In addition, the January 2003 United Nations Environment Programme (UNEP) Post-Conflict Environment Assessment Report outlines the many environmental problems affecting Afghanistan. UNEP reports that air quality problems in Afghanistan's urban areas can be tied to vehicle emissions and dust. With over one-half a million vehicles on the road – most of which run on low-grade diesel - urban centers are affected most significantly. Air quality suffers further during the colder months due to increased emissions linked to ovens, stoves and open fires.

Air quality sampling was performed at several urban sites in Herat, Kabul, Kandahar, and Mazar-i-Sharif. In addition to dust, UNEP reports high concentrations of polyaromatic hydrocarbons (PAHs) at all sites. One of the pollutants detected - benzo-a-pyrene - is believed to increase risk of lung cancer. World Health Organization (WHO) average values for this pollutant in urban areas range from 1 to 10 nanograms/cubic meter (Ng/m3). Concentrations detected at Mazar-i-Sharif were as high as 13.6 Ng/m3. For Kabul and Kandahar, concentrations were between these values. Concentrations in Herat were below WHO average values.

# 3.1.2 Environmental Consequences

The Preferred Action, Alternative 3, is the proposed preparation of a specified site as an industrial park. For this alternative, new industries would be limited to light and medium manufacturing or the equivalent from an environmental impact perspective.

There is no appreciable greenhouse gas generation associated with the proposed activity. IPDA will assess industrial tenants on a case-by-case basis. Further, there are no expected urban heat island effects. The site will be developed to ensure a net increase in trees and plants, which should help mitigate any greenhouse gases that might result from individual tenants.

In the case of Alternative 2, environmental review of each specific purchase request would be conducted, and commitments or restrictions, such as covenants to mitigate potential impacts, could result from these reviews. The commitment to limit industries to light or medium categories is part of the restrictions to be applied for Alternative 3. In addition, either Alternative 2 or 3 would cause minor pollution from increased operational traffic as a result of development of facilities.

For both Alternatives 2 and 3, temporary and intermittent air quality impacts would be associated with site preparation and facility construction activities. Pollution from fossil fuel combustion in construction equipment, fugitive dust emissions from operation of this equipment during dry conditions, increased traffic during construction, and any open burning would cause some minor and temporary air quality degradation. However, the project team can use reasonable precautions to prevent fugitive dust emissions and to avoid open burning under specified conditions.

Alternatives 2 and 3 have similar potential for air quality impacts. Individual sources would be expected to have minor air quality impacts. However, cumulative impacts from Alternative 2 or 3 would be a potential concern unless commitments were made to limit manufacturing industries to the light and medium categories, which would minimize overall emissions from the industrial park. Therefore, manufacturing should be limited to light and medium categories.

#### 3.2 Groundwater and Surface Water

The Ministry of Water and Power is responsible for managing surface waters and reservoirs, national power supply, and planning and reconstruction of hydropower dams. At this time, this ministry does not have an environmental department and conducts limited collaboration with other ministries with water management mandates, including MIWRE and the Department of Environment. IPDA is responsible for all regulations, standards, and rules that govern this development of this site. IPDA will assess industrial tenants on a case-by-case basis.

#### 3.2.1 Affected Environment

#### 3.2.1.1 Groundwater

Afghanistan possesses annual potential reserves of the groundwater of roughly 18 billion cubic meters (m3). With recent droughts, there has been a large development of groundwater use in the irrigation and water supply sectors in the country. During recent periods of drought, assorted agencies have anecdotally reported declines of 4-5 meters in the water table level in Kabul.

The proposed site is located within the Eastern Mountain Zone, one of Afghanistan's eleven geographic zones. The Eastern Mountains were presumably subjected to the same organic movements which uplifted the Himalayas proper (probably during the Middle Tertiary and later, or between 15 to 40 millions of years ago), folding and distorting the original sedimentary deposits, laid down in the Tethys Sea and extensive Middle Eastern Mesozoic (70 to 225 millions of years ago) marine basins.

At times, the uplifted mountainous areas were subjected to intensive glacial and fluvial erosion during the Pleistocene (Ice Age), which began about a million or a million and one-half years ago. In addition, repeated tectonic stress during the mountain building movements created great fault systems. Most valleys are marked by fault lines created chiefly by Alpidi (Tertiary) movements. Although many valleys are narrow, some wider intermundane basins do permit agriculture. Frequent earthquakes, about fifty shakes of varying intensity per year, still occur.

The Kabul Valley is one of four major valleys that define the Eastern Mountains. The Kabul Valley is an area of high level basins, with altitudes varying from 1,500 to 3,600 meters filled with probable Neogene and Pleistocene sediments). The valley is surrounded by mountains of old rugged crystalline and metamorphic Paleozoic rocks. The Paghman Range sits northwest of Kabul, with the Safed Koh to the southeast and the Kohi-Baba rising in the west.

Rainfall and snowmelt contribute to groundwater recharge. In the Kabul area, annual distributed recharge is estimated to be 250 millimeters. There are anecdotal reports of the following borehole yields.

- Where bedrock underlies a Neogene/Quaternary sediment sequence, boreholes completed in the fractured and weathered bedrock surface are reported to yield 5-8 liters/second.
- Quaternary alluvial sediments in the Kabul area are reported have borehole yields of 10-12 liters/second.
- Similar boreholes in the typically finer grained Neogene sediments (siltstones, argillites, some coarser strata) are reported to typically yield 5 liters/second.

Typical aquifer horizons in the Kabul area are reported to have a typical hydraulic conductivity of 30-60 meters/day.

#### 3.2.1.2 Surface Water

The project site is located approximately 6.5 kilometers from the Logar River, the nearest surface water. The Logar River is part of the Kabul River System. Roughly 220 kilometers long, the Logar River flows north out of the mountains of the eastern Hazarajat. The river flows through the Logar Valley and joins the Kabul River at approximately 6 kilometers east of Kabul. Part of the greater Indus River System, the Kabul River flows from its headwaters at Sar Cheshtua just east of the entrance to the Unai Pass (roughly 4,200 meters above sea level) through the Kabul Valley. The river makes its way to the post-World War II German-built dam at Sarobi, the hydroelectric station at Mahipar, and the Russian-built dams at Naghlu and in the Darunta gorge.

In the Kabul area, rainfall averages approximately 271 millimeters/year, with March being the wettest month at 71 millimeters/year and June the driest month at 0 millimeters/year. The average monthly air temperature ranges from -5°C in January to 31°C in July, with an average temperature of 12°C.

#### 3.2.2 Environmental Consequences

#### 3.2.2.1 Groundwater

Over most of the site area, the water table is 40 meters deep. Groundwater quality at the site is poor and not fit for human consumption.

Potable water will be accessed by tapping into an existing pipeline, which was originally built for a textile plant that is no longer in operation. The existing pipeline runs underground near the entrance to the Bagrami Industrial Park. This pipeline is connected to a well complex some 6.5 kilometers away. These wells

draw water from the Logar River Aquifer. The Government of Afghanistan operates the well complex.

While environmental impacts on groundwater resources have not been a priority, there is increasing interest in protecting groundwater quality. In Kabul, sources of gasoline and diesel fuel, for example, are in the vicinity of drinking water wells and are a threat to the groundwater table. Any spill from these operations will find its way to the groundwater and will pollute the drinking water resource.

Alternative 1 – No Action—This action would have no effect on groundwater.

Alternatives 2 and 3 – Develop the Industrial Park - Under these alternatives, the impact on groundwater from all properly managed activities would be insignificant. The types of industries expected to be located in the park would not be expected to withdraw or discharge groundwater for their operation. Proper engineering practices will be applied to any waste or chemical storage, preventing groundwater contamination. The limited overall density of development and amount of impervious surface created would not greatly alter groundwater recharge.

#### 3.2.2.2 Surface Water

As noted earlier, the closest surface water to the proposed site is the Logar River, which is roughly 6.5 kilometers away. Therefore, impacts to surface waters are not a concern.

Alternative 1 – No Action—This action would have no effect on surface waters.

Under Alternatives 2 and 3, water supply will be provided by an existing underground pipeline. Sanitary wastewater disposal will be managed with a septic system. Wastewater generated by individual tenants will be addressed on a case-by-case basis. IPDA and the Afghan Investment Support Agency (AISA) are responsible for regulating these activities.

Any construction activities would adhere to best management practices (BMPs). BMPs and mitigation sufficient to avoid adverse impacts would be required for all construction activities. Site grading and soil removal would be minimized to preserve and protect the environment. Clearing operations would be staged so that vegetative stripping would be limited to land to be developed promptly. Mulch or temporary cover would be applied whenever possible to reduce sheet erosion. Permanent vegetation, ground cover, and sodding would be installed as soon as possible after site preparation. All natural features would be preserved to the extent possible and incorporated into the final design layout. Sediment basins would be used to control sediment runoff. Surface runoff would be managed to avoid adverse impacts. Landscape maintenance would employ registered herbicides used in accordance with label directions. Construction runoff and other wastewaters will be managed using proper practices and would not have a significant adverse impact on the environment.

Assessing the impacts of operation is difficult. Since the proposed industrial park would be new and no industries have announced their intentions to locate there, it is impossible to quantify precisely the likely direct impacts of their future wastewater discharges. However, it is possible to address probable impact on the environment. The following are general types of wastewater normally produced by commercial and industrial facilities.

- Storm water runoff, which may be contaminated by contact with disturbed soils from construction activities, industrial materials, air emissions, or spills.
- Sanitary wastewater from bathrooms, showers, and cafeterias, which is similar to that produced by homes.
- Industrial process wastewater, which would vary greatly depending on the source processes.
- Noncontact cooling water, which is at a higher temperature, but free of contaminants.

# Characteristics Flow and Quantity

- Sanitary wastewater would be in direct proportion to the number of employees and the type of facilities. Plants with showers and cafeterias would generate more wastewater than those with bathrooms.
- Industrial process wastewater would vary with the process and equipment involved.
- Storm water runoff would vary with the weather. Increasing the amount of impervious surface would increase the volume and flow rate of storm water runoff.
- Noncontact cooling water would vary with the equipment involved. The
  original source may be either raw, untreated water from a well or stream
  or treated potable water.

#### Contaminants and Treatment

Depending on the type of industry and the destination of the wastewater, various constituents may have to be removed before final discharge. The ones of primary concern are those that are *p*ersistent in the environment, *b*ioaccumulate, and/or are *t*oxic (PBTs). Wastewater constituents that may require treatment include soluble organics, suspended solids, dissolved inorganics, toxics (some metals, cyanide, some organics), nutrients, oil and grease, color and turbidity, foam, and temperature.

Treatment methods vary depending on the type and quantity of constituents but may include physical methods, such as skimming, filtering, and cooling, and chemical methods, such as precipitation and neutralization.

# Regulations

Water regulations are the responsibility of IPDA and the AISA. All wastewater management activities will be in compliance with these regulations. When sanitary and industrial wastewaters are managed properly, there should be insignificant environmental impacts.

# Sanitary and Process Wastewaters

Sanitary wastewaters will be discharged to the soil by septic tank adsorption field systems. Current site design plans envision a septic system that consists of 9 modules or pods. This design was chosen after an in-depth analysis of the alternative solutions. Individual pods are to be built on a phased basis. It also should be noted that the UN Environmental Programme has acknowledged that septic systems are an appropriate approach to managing sanitary wastewaters.

While commercial systems resemble residential systems in their basic design and function, the following factors need to be considered:

- Higher daily wastewater volumes and faster flow rates;
- Higher organic content in wastewaters;
- Potential for cleaners and other chemicals in wastewater; and
- Leachfield siting constraints.

Engineers adhering to best engineering practices will design the septic system. Tests and analyses may include:

- depth to ground water;
- soil infiltration/percolation rate;
- setback distance, that is, distance to nearby wells and other structures;
- absorptive capacity of entire drainfield; and
- soil type.

As reported by Brown, acceptable percolation rates vary from 2.5 to 3 minutes per inch. A key factor is ensuring that soils in the drainfield are well drained but yet still retain water long enough to allow for proper wastewater treatment. A properly designed and maintained septic system can manage wastewaters from the proposed industrial park. Good operation and maintenance practices will be defined and implemented. A key element will be establishing a regular pumping schedule. Commercial septic tanks typically require considerably more frequent pumping than residential systems.

To ensure proper management, any process wastewaters generated by park tenants will be evaluated on a case-by-vase basis. Wastewater management decisions will be based on these evaluations. In all cases, applicable regulations will be followed.

The United Nations' Post-Conflict EA acknowledges the need for a city-by-city assessment of costs and appropriateness of implementing sewer systems and wastewater treatment technologies in Afghanistan. Kabul is the only city in Afghanistan that collects wastewater and delivers it to a wastewater treatment facility. This service is provided to two areas – Districts 9 and 16 - of the city that are home to approximately 100,000 residents. Given the lack of wastewater infrastructure, the UNEP report acknowledges that septic systems can serve as a temporary solution to wastewater management needs.

#### Storm Water

Storm water runoff may become contaminated as it flows over construction areas or over commercial and industrial surfaces (roofs, parking lots, inventory stored outside, etc.). Appropriate routine BMPs, such as prompt revegetation and other erosion control measures, are normally required. As appropriate, monitoring for

applicable contaminants would be required before discharge at the property boundary.

Engineers will design and implement an effective system to control storm water at the proposed industrial park. Final design parameters will be based on storm data, for example, designed for a 10-year storm volume with the capability of accommodating 330 cubic feet per second of storm water. The system would include collection pipe with diameters up to 2 meters. A properly sized retention pond with outflow control will be built.

After construction, storm water runoff for most new industries should not require treatment. Need for treatment would be determined by on-site processes and other factors. If contamination occurs, storm water collection and treatment would be required. Proper design and operation will ensure that discharges of storm water runoff will have minimal negative environmental impacts. A site-specific stormwater pollution prevention plan will be developed. This plan will ensure that practices are in place to reduce exposure of industrial materials to stormwater, such as good housekeeping, spill prevention and cleanup and structural and non-structural controls.

# 3.3 Floodplains

#### 3.3.1 Affected Environment

This site is not located in a flood plain. While flash floods are a possible, the last unofficial record of a flash flood on this site is estimated to have occurred some 20-30 years ago.

#### 3.3.2 Environmental Consequences

In response to concern about the possibility of flash flooding, engineers will assess the benefits of constructing a floodway. Further, under Alternatives 2 and 3, the site will be laid out in a manner that maximizes storm water control, thereby minimizing flooding concerns.

# 3.4 Terrestrial Ecology

#### 3.4.1 Affected Environment

#### 3.4.1.1 Plants

Common trees found in the mountains are evergreens, oaks, poplars, wild hazelnuts, almonds, and pistachios. The plains of the north are largely dry, treeless steppes, and those of the southwestern corner are nearly uninhabitable deserts. Common plants in the arid regions include camel thorn, locoweed and wormwood, a mixture of sagebrush.

Today, woodlands and forests have been halved and cover less than 2 per cent of the country. During the years of Taliban rule, forests were cut and the wood delivered to markets in Pakistan. Refugees have turned to the remaining same woods for survival, and forests and vegetation are being cleared for farmland.

#### **3.4.1.2 Animals**

The World Conservation Union (IUCN) has categorized many of the larger mammals in Afghanistan as globally threatened. These include the following: snow leopard (*Uncia uncia*), wild goat (*Capra aegagrus*), markhor (*Capra falconeri*), Marco Polo sheep (*Ovis ammon poli*i), urial (*Ovis orientalis*), and Asiatic black bear (*Ursus thibetanus*).

Other mammals of interest include ibex (Capra ibex), wolf (Canis lupus), red fox (Vulpes vulpes), jackal (Canis aureus), caracal (Caracal caracal), manul or Pallas's cat (Otocolobus manul), striped hyena (Hyena hyena), rhesus macaque (Macaca mulatta), and brown bear (Ursus arctos).

Many of Afghanistan's bird species are globally threatened, including the Siberian crane (*Grus leucogeranus*), white-headed duck (*Oxyura leucocephala*), marbled teal (*Marmaronetta angustirostris*), Pallas's sea-eagle (*Haliaeetus leucoryphus*), greater spotted eagle (*Aquilla clanga*), imperial eagle (*Aquilla heliaca*), lesser kestrel (*Falco naumanni*), corncrake (*Crex crex*), sociable lapwing (*Vanellus gregaria*) and the pale-backed pigeon (*Columba hodgsonii*). Among these, the Siberian crane is of particular significance. IUCN has categorized this species as Critically Endangered. It is believed to face an extremely high risk of extinction in the wild in the immediate future. The global population, estimated to contain 2,500–3,000 birds, is divided into three groups. A single breeding pair may remain in the central group, which formerly used wetlands in Afghanistan (and Iran) as stopover points during migration between breeding grounds in Russia and the main wintering area in India. Ab-e-Estada was the key resting site in Afghanistan.

Other birds of interest found in Afghanistan include greater flamingo (*Phoenicopterus ruber*) and houbara bustard (*Chlamydotis undulat*a). The country has one endemic bird species, Meinertzhagen's snow finch (*Montifringila theresae*), and major breeding populations of six other restricted regional species: yellow-eyed pigeon (*Columba eversmanni*), plain willow warbler (*Phylloscopus neglectus*), Brooks's willow warbler (*P. subviridis*), variable wheatear (*Oenanthe picata*) and Dead Sea sparrow (*Passer moabiticus*). The population of yellow-eyed pigeon is particularly important because the species is rare and declining throughout its Central Asian range. Afghanistan has significant numbers of breeding lammergeier (*Gypaetus barbatus*), black vulture (*Aegypius monachus*) and other birds of prey.

The following four species of reptile are believed to be restricted to Afghanistan: the geckos *Asiocolotes levitoni* and *Cyrtopodion voraginosus*, and the lacertid lizards *Eremias afghanistanica* and *E. ari*a. The salamander *Batrachuperus mustersi* occurs in mountain streams in the central Hindu Kush of Afghanistan and is believed to be at risk from habitat modification and conflict.

While there are limited studies on the freshwater fishes of Afghanistan, many are believed to be endemic. The Helmand River system in particular, lying almost entirely within the country, has up to three species of snow trout *Schizothorax* and five loaches *Noemachilus* that appear to be restricted to Afghanistan (species taxonomy in both genera is not well established).

# 3.4.2 Environmental Consequences

#### 3.4.2.1 Plants

The plant communities that occur on the site are common to, and representative of, Kabul Province. Although construction of the proposed facility would affect some plants, the loss is expected to be insignificant. Field surveys indicate that these vegetation communities are characterized by common and widespread species in Kabul Province that would not be adversely affected by the loss of these populations. No uncommon plant communities were identified on the site.

#### **3.4.2.2 Animals**

Most of the wildlife habitats that occur on the site are common throughout the region. Development of the site would remove some plant habitat and displace wildlife populations that favor these habitats. Most species would find refuge in similar habitats adjacent to the site. Following development, many of these species would likely re-colonize in areas surrounding the proposed industrial park. Thus, implementing the proposed project is not expected to result in significant adverse impacts to terrestrial animal populations of the site. Further, if BMPs are used during construction activities, these areas would not be adversely affected.

Site development may result in an increase in populations of animals that favor recently modified habitats. Some of these species might become a "nuisance" in the area.

# 3.5 Aquatic Ecology

#### 3.5.1 Affected Environment

#### 3.5.1.1 Industrial Park Site

There are no aquatic habitats that would be affected by the proposed development of an industrial park.

# 3.5.1.2 Proposed Water and Sewer Lines Routes

An existing pipeline will deliver potable water to the site.

Sanitary wastewaters will be discharged to the soil by septic tank adsorption field systems. Current site design plans envision a septic system that consists of 9 modules or pods. Individual pods are to be built on a phased basis. The UN Environmental Programme has acknowledged that septic systems are an appropriate approach to managing sanitary wastewaters, particularly in areas not served by municipal sewers.

Any process wastewaters generated by park tenants will be evaluated on a caseby-vase basis by IPDA. Wastewater management decisions will be based on these evaluations. In all cases, applicable regulations will be followed.

# 3.5.2 Environmental Consequences

#### 3.5.2.1 Potential On-Site Impacts

No aquatic communities would be affected under any of the three alternatives.

# 3.5.2.2 Impacts of Construction of Proposed Water and Sewer Lines

As discussed earlier in Section 3.2.2.2, BMPs will be used during any construction activities.

Sanitary wastewaters will be discharged to the soil by septic tank adsorption field system. Any process wastewaters generated by park tenants will be evaluated on a case-by-vase basis by IPDA. These wastewaters would be subject to specialized treatment when warranted and would be routed to a proper treatment facility.

There will be no potential impacts on aquatic life and other aspects of the aquatic environment.

# 3.6 Sensitive Aquatic Animals

#### 3.6.1 Affected Environment

General aquatic ecology of this site and the surrounding area is discussed in the Aquatic Ecology, Affected Environment Section (3.5.1), of this document.

#### 3.6.1.1 Industrial Park Site

No listed aquatic species are known to occur on the proposed industrial park site.

# 3.6.1.2 Proposed Water and Sewer Lines

No sensitive aquatic animals will be potentially affected by this construction.

# 3.6.2 Environmental Consequences

Aquatic communities would not be affected by either construction or operation of the proposed action.

#### 3.7 Terrestrial Threatened and Endangered Species

#### 3.7.1 Affected Environment

#### 3.7.1.1 Plants

There are no known threatened or endangered plant species on the proposed site.

#### 3.7.1.2 Animals

There are no known threatened or endangered animal species on the proposed site.

#### 3.7.2 Environmental Consequences

#### 3.7.2.1 Plants

No occurrences of or suitable habitat for threatened or endangered plant species were identified during field inspections of the proposed site. Therefore, none of the proposed alternatives are expected to have impacts on threatened or endangered plant species or their habitats.

#### **3.7.2.2 Animals**

By implementing BMPs and best construction practices, there will be no deleterious effects on threatened or endangered animal species. Some species may seek habitat in nearby areas. The region provides many hectares of similar habitat. Implementing the proposed activity is not expected to result in adverse direct, indirect, or cumulative impacts to terrestrial animals or their habitats.

#### 3.8 Wetlands

#### 3.8.1 Affected Environment

No wetlands were identified on the proposed industrial park site.

### 3.8.2 Environmental Consequences

The absence of wetlands means that there are no potential environment consequences.

#### 3.9 Socioeconomics

Chronic unemployment is a serious problem across Afghanistan. Afghanistan is an essentially agrarian country, with around 80 per cent of the population involved in farming, herding, or both. A relatively small part of the land area of Afghanistan is suitable for arable farming or horticulture, including both irrigated as well as rain-fed farming. Prior to the Soviet occupation, roughly 85 per cent of the population derived their main livelihood from agriculture.

The Transitional Authority recognizes that a variety of projects – including environmental management efforts - can create numerous employment opportunities when coupled with labor-intensive methods.

One important consideration is giving priority to hiring of Afghan professionals and staff members. When needed, appropriate training should be provided to supplement or compliment existing skills.

#### 3.9.1 Affected Environment

The proposed industrial park is in Kabul Province, which will be the primary labor market for such a park. Secondary labor markets may include neighboring provinces.

#### 3.9.1.1 Population

The population of Kabul Province is approximately 2.8 million. Kabul Province is the most populated province in Afghanistan.

#### 3.9.1.2 Labor Force and Unemployment

Afghanistan is an extremely poor country, highly dependent on farming and livestock. Recent political and military unrest have had a significant negative effect on the economy. Severe drought has added to the economy's difficulties.

Additional economic stress can be linked to the significant influx of refugees returning to Afghanistan. According to a 2002 article from ReliefWeb, the United Nations High Commissioner for Refugees (UNHCR) has estimated that over one million Afghans have returned home, with almost 40% of these people going to Kabul Province. In addition, a September 2004 article reports that roughly 1 million Afghans have returned to Afghanistan from Iran.

#### 3.9.1.3 Jobs

The 2000 estimated labor force of Afghanistan was 10 million.

#### 3.9.1.4 Income

The 2000 per capita personal income in Afghanistan (purchasing power parity) was estimated to be \$800.

# 3.9.2 Environmental Consequences

#### 3.9.2.1 Alternative 1 - No Action

If the proposed industrial park is not built, the site would remain undeveloped. These would be no impacts to the local economy, population, public services, or local government revenues.

# 3.9.2.2 Alternatives 2 and 3 - Industrial Park Development

Development of the proposed industrial park could lead to important increases in employment, income, and population in the area. Good estimates of impacts cannot be made without specific plans or proposals. However, a general idea of the possible impacts can be surmised by examining similar projects.

Depending on the blend of industries, it is estimated that this industrial park can provide employment for over 3,000 workers. With additional jobs from multiplier effects, the total increase in jobs could exceed 5,000.

Some of the firms locating in the park could induce other plant locations in the general area around the park or in surrounding areas, causing additional increases in jobs and income.

The increases in jobs and in population may lead to a need for additional housing and to an increase in the needed level of community services, such as schools, fire and police protection, and medical services. However, this growth in jobs and in population would occur over a period of several years, allowing providers of these services time to accommodate growth. While some investment in facilities and equipment may be necessary, local government revenues would increase. The revenue increase may lag the need for investment somewhat, but the incremental nature of the growth should help local governments to accommodate it. Similarly, growth in housing needs would be incremental. Because of the incremental nature of the anticipated growth, insignificant impacts on housing and community services would be expected.

# 3.10 Transportation

#### 3.10.1 Affected Environment

The proposed site is located in Kabul Province. The site is approximately 7.5 kilometers from downtown Kabul and roughly 3 kilometers from the village of Bagrami. A wide paved road that borders the southern boundary of the site provides primary access to the site. A dirt road borders the eastern boundary of the site. This dirt road could be improved to provide additional access.

# 3.10.2 Environmental Consequences

Industrial development of the site would result in 95 industrial lots. This industrial development would result in the generation of additional traffic on the adjacent roadway network. The industrial development may include highly diversified facilities, such as manufacturing, service, utility, assembling, and warehouses, with a wide variation in the proportions of each type. Increased traffic would result from employees commuting to/from the site, consumers, and any possible truck deliveries and shipments. However, given current conditions in Afghanistan, it is very difficult to develop reliable estimates of traffic and potential impacts to the transportation network.

As noted above, a paved road provides access to the site. This road should be able to handle the increased traffic adequately, and there would be little effect on other road users.

#### 3.11 Prime Farmland

#### 3.11.1 Affected Environment

For purposes of this document, prime farmland soils are defined by the U.S. Department of Agriculture as those soils that have the best combination of physical and chemical properties for production of agricultural crops. The site for the proposed park contains no soils classified as prime farmland.

# 3.11.2 Environmental Consequences

Since no prime farmland is found at the site, there are no environmental consequences. Dedicating this land for development of an industrial park, either incrementally or all at once, would have no impact on prime farmland.

# 3.12 Visual Quality

# 3.12.1 Affected Environment

Visual quality of the development is important to minimize discord to viewers of the property from surrounding locations and to maintain attractiveness within the park and long-term economic value to the tenants and community.

Development is extremely sparse in the vicinity of the affected area. The site is roughly 7.5 kilometers from Kabul and 3 kilometers from the village of Bagrami.

The site is considered common in terms of scenic attractiveness, given the large amount of land with similar visual quality in the area.

# 3.12.2 Environmental Consequences

#### 3.12.2.1 Alternative 1

With no action, the site would not be developed further. Vegetation would continue to grow denser in areas that are not maintained. The continued growth of vegetation would further enhance existing natural buffers and screening from the locations described above for the affected environment.

#### 3.12.2.2 Alternative 2

To sell land to industrial users on an as-needed basis would gradually change the existing landscape from a level of common scenic attractiveness, combined with manmade developments, to an area of urban-scale industrial and commercial development. Visual coherence would be reduced and scenic attractiveness would be affected. The extent of adverse visual impacts would depend to a great extent on the visual sensitivity of the site planning and individual architectural designs. Activities, equipment, and materials seen during the construction activities by area residents would add temporary visual discord until project cleanup was complete for each project. This process could occur over many years as the individual sites are developed and could be viewed as somewhat permanent by local residents.

Visual congestion due to increased traffic is expected to be greater. Some of the residents may have direct views of the site. Views in the foreground from their

homes would be additionally affected as an increased number of cars and trucks use the route to gain access to the plant site. The degree of impact is somewhat dependent on the location, size, density, and type of vegetation in their foreground views to the plant site and the entrance.

Area residents would notice an increase in background sky brightness. If typical lighting is used, the brightness increase may be noticeable for several kilometers. The process of mitigating the brightness increase would consist of several steps. These include evaluating the need for various nighttime activities, determining the appropriate lighting level and frequency for these activities, minimizing the quantity and use of lights, and implementing appropriate "dark sky" techniques.

Extensive earthwork would be required as each site is developed. The adverse impacts of these activities could be substantially reduced by careful site design that protects existing tree cover in sensitive locations. Retained and enhanced vegetative buffers around each site would minimize impacts seen by area residents, particularly at the entrance. Extensive tree plantings are proposed. When finalized, it is expected that there will be more trees than on the original site.

Broadly horizontal buildings with rooftops below the wooded skyline and with a subtle scheme of natural colors (e.g., grays, darker gray-greens, and black) would minimize contrast with the natural environment and be visually compatible. Dark roofs would provide much less contrast than very light ones. Buildings with rooftops seen above the tree line could cause adverse contrast and visual discord and would need special attention to color and structure to reduce the effect.

To minimize visual impacts, each project would need to adhere to the following development standards.

- The exteriors of buildings to be located in the park shall incorporate structural arrangements and color schemes that will limit visual discord with the natural background.
- Nighttime lighting for the industrial park and buildings located in it shall incorporate features for limiting effects on background sky darkness.
- All buildings shall be visually screened from adjacent parcels and off-site property at the front, rear, and sides, using methods such as architectural fencing, berms, and plantings, individually or in combination.

It has been determined that the visual impacts of Alternative 2 would not be significant.

#### 3.12.2.3 Alternative 3

Developing the site as a whole is the Preferred Alternative. Under this action, the visual character of the land would be changed at a faster rate as parcels are sold and developed. Temporary visual discord would not last as long with simultaneous project construction. Visual concerns under this alternative would be similar to Alternative 2, although congestion of traffic would be expected to be greater in a shorter period of time.

Under this alternative, specific mitigation concerns would be similar to those described in Alternative 2 but would cover the entire park at one time. Through adherence to the development standards identified above, it has been determined that the visual impacts of Alternative 3 would not be significant.

# 3.13 Managed Areas and Recreation

#### 3.13.1 Affected Environment

There are neither managed areas nor recreation opportunities in the vicinity of the site.

# 3.13.2 Environmental Consequences

Under the No Action Alternative, there would be no effects to Managed Areas or recreational opportunities.

Under either Action Alternative, proposed property development would take place. Routine BMPs used during construction would limit environmental concerns.

#### 3.14 Cultural Resources

#### 3.14.1 Affected Environment

Kabul Province has a long history of human occupation. The proposed site, however, has no record of hosting cultural and archeological resources.

# 3.14.2 Environmental Consequences

Cultural and archeological resources should not be affected by construction of the proposed industrial park. Should there be any inadvertent archaeological discoveries within the proposed site, IPDA shall be notified. Appropriate measures to identify, evaluate, and treat these discoveries will be determined and implemented.

#### **3.15 Noise**

Noise is basically unwanted sound, and at high levels, noise can damage hearing, cause sleep deprivation, interfere with communication, and disrupt concentration. Noise is measured logarithmically in decibels (dB). Due to its logarithmic scale, if a noise increases by 10 dB, it sounds as if the noise level has doubled. If a noise increases by 3 dB, the increase is just barely perceptible to humans. Often sound is measured as "A-weighted;" this filters out low frequency sounds which humans are unable to hear and is more indicative of the noise people actually hear. In general, the Sound Pressure Level from an outdoor noise source radiates out from the source, decreasing 6 dB per doubling of distance. Thus, a noise measured at 80 dB 50 feet away from the source will be 74 dB at 100 feet, 68 dB at 200 feet, and 62 dB at 400 feet.

Due to the potential for sleep disruption, loud noises between 10 p.m. and 7 a.m. are normally considered more annoying than loud noises during the day. Therefore, community noise levels are often measured by the Day-Night Average Sound Level (Ldn). This index is an average of noise in a 24-hour period; however, a 10 dB penalty is added to noise between 10 p.m. and 7 a.m. In the United States, there is a goal of 55 dB for Ldn in outdoor spaces.

#### 3.15.1 Affected Environment

The area surrounding the site is rural. Nearby noise receptors consist of scattered homes, some as near as 100 feet.

#### 3.15.2 Environmental Consequences

#### 3.15.2.1 Construction Impacts

The construction of the industrial park would require equipment for excavation, such as backhoes, front loaders, bulldozers, and dump trucks; materials-handling equipment, such as cement mixers and cranes; as well as compressors, generators, and pumps. Noise generated from this type of equipment would range from 87 to 99 dBA at 30 feet (Cowan, 1994), which would be equivalent to 57 to 69 dBA at 1,000 feet.

Construction is expected to temporarily increase noise levels in the vicinity. Although certain areas would experience noticeable noise increases during construction, due to the temporary and episodic nature of construction, and because most of it would be during weekday daylight hours, the construction noise is not expected to have a significant effect on nearby residents.

Construction activities would increase traffic on local roads. Large trucks would produce noise levels around 89 dBA at 30 feet (Cowan, 1994), which is equivalent to 77 dBA at 120 feet.

# 3.15.2.2 Operational Impacts

The development of an industrial park would generally increase noise levels, although the amount of the increase would depend on many factors, including the type of industry, the size of the plant, the use of noise control devices, the number of employees, and the amount of increased traffic.

In the United States, guidelines have been set by the U.S. Department of Housing and Urban Development. Following these guidelines, areas of the industrial park to be used for office buildings should not exceed an Ldn of 75 dBA, and areas to be used for wholesale, industrial, manufacturing, and utilities should not exceed an Ldn of 80 dBA. Additionally, under the guidelines, development of the park should not cause the Ldn at a nearby residence to exceed 65 dBA.

The development of an industrial park on this site would likely increase traffic on local roads. This increase in traffic would not cause a significant increase in noise levels along these roads, although the noise from the industrial park and the additional traffic would generally be noticeable.

Operational noise from the industrial park is not expected to have significant effects on nearby residents.

# 3.16 Solid and Hazardous and Special Wastes

#### 3.16.1 Affected Environment

At this time, it is difficult to assess whether any park tenants will generate solid or hazardous and special wastes. All waste generation will be regulated by IPDA and the AISA. Waste generation by individual tenants will be examined on a case-by-case basis by IPDA.

# 3.16.2 Environmental Consequences

Since the industrial park would be new and no industries have announced their intentions to locate there, it is impossible to quantify the direct impacts of their future. However, it is possible to describe the general categories of waste and their most probable impacts on the environment.

**Solid Waste** - Solid waste from processes such as those likely to be found in the proposed industrial park can be disposed of in a landfill designed to restrict the migration of detrimental materials from the landfills into the environment. Solid wastes that are managed and disposed of in accordance with applicable regulations would not have a significant adverse impact on the environment.

Wastes resulting from construction activities are typically nondegradable and inert. It is possible that these wastes would be buried on site. Due to the inert nature of these construction wastes, these practices would not adversely affect the environment. Proper management and disposal of these construction wastes would not have a significant impact on the environment.

Solid wastes will be collected onsite. Trucks operated by the Municipality of Kabul will collect solid wastes. These wastes will be transported to a municipal solid waste landfill. This landfill is located west and less than 10 kilometers away from the proposed industrial park.

**Hazardous and Special Wastes** - All hazardous and special wastes will be managed in a safe, environmentally sound manner. Should solid hazardous wastes be generated, these will be collected in a central facility. Tracking and handling protocols will be put into place.

As discussed in section 1 of this EA, industrial operations with greater potential for impacts would receive review by IPDA at the EA to EIS levels. Examples include those that handle large amounts of hazardous materials. In addition, any operations that may generate radiological, medical or other special materials or wastes will be subject to further review by IPDA.

Hazardous materials may be associated with construction. Any pesticide or herbicide use will comply with proper application techniques. No use of explosives is anticipated.

Hazardous wastes may be generated during construction. Should construction activities result in the generation of hazardous wastes, these will be collected in a central facility. Tracking and handling protocols will be put into place.

Hazardous substances are in wastewater would be pretreated to nonhazardous levels and then handled with the other wastewater and discharged to the on-site septic system.

Proper management and disposal of hazardous wastes would not have a significant impact on the environment.

#### 3.17 Seismic Considerations

Afghanistan is one of the most active seismic regions of the world. As reported by the U.S. Geological Survey, an earthquake occurred as recently as October 16 of this year.

The geological structure of Afghanistan is the result of accretion of colliding Gondwanan microplates or fragments onto the margins of Eurasia along the Herat-Panjshir E-W striking geosuture. Similar structures along the Chaman-

Moqor NE-SW striking fault system, the Sarobi-Altimore NE-SW arcuate fault system, and other secondary faults cover most of the regions of Afghanistan.

In Afghanistan, most earthquakes are located in the Hindukush Mountains in the northeastern part of the country. Earthquakes of magnitude 4 occur nearly every week or two. Most are very deep seated, i.e., having a hypocentral/focal depth of more than 33 kilometers. Depending on their magnitude, some quakes have been felt as far away as parts of northern India and north-central Pakistan. These shocks rarely cause any damage in the region. According to the Global Seismic Hazard Assessment Programme (GSHAP), Kabul Province is located within an area with high probability of damages under earthquake strikes.

With this in mind, all construction in the proposed industrial park will comply with the seismic load design of the 2003 edition of the International Building Code (IBC), which establishes the minimum regulations for building systems using prescriptive and performance-related provisions. Updated standards have been incorporated, including the 2002 edition of Minimum Design Loads for Buildings and Other Structures, which provide the basis for the structural design loads. This is consistent with USAID requirements, which call for all designs developed in the Kabul region to meet the region 4 seismic standards.

#### 3.18 Landslides

Landslides can cause extensive damage to property and occasionally result in loss of life. All development at the proposed site will proceed by reducing the potential impacts of land movement. Where necessary, a soil engineer or engineering geologist will assess issues associated with development. A slope maintenance program will be implemented to gather basic site information, thereby allowing suitable approaches to potential problem areas.

The site can be developed to incorporate control measures such as earthretaining work, rock fall prevention fences, slope stabilization and other landslide
protection measures. A very practical approach is relying on slope planting
techniques to provide protection. Vegetation can play a key role in slope
stabilization and erosion control. Further, smart construction practices would be
implemented. Buildings, for example, would be equipped with flexible pipe fittings
to avoid gas or water leaks. These flexible fittings will be less likely to break.

#### 3.19 Cumulative Impacts

Cumulative impacts of the proposed project, either as Alternative 2 or Alternative 3, are not expected to be significant. Property with known sensitive ecological resources would not be transferred. The resources that would be affected are common in the area, and proposed mitigation measures would limit the impacts further. Thus, impacts of the development of the property itself and the introduction of necessary utilities are expected to be small.

# 4.0 COMMITMENTS TO MINIMIZE ADVERSE IMPACTS OF THE PROPOSED ACTION

The following environmental commitments have been identified for Alternative 3, the Preferred Alternative. These environmental and resource protection criteria would be included in the land transfer deed as real covenants that attach to and run with the land and will be binding on any party who may hereafter come into ownership or possession of the land. Adherence to these commitments during construction and operation of the proposed industrial park site and associated projects would minimize the potential for environmental impacts.

The following uses are permitted on the proposed industrial park site.

- Light and medium manufacturing, assembling, and warehousing for distribution purposes.
- Transportation and service facilities
- Retail sale of food, beverage, and other such convenience items to persons employed on the property, as long as these items are not offered for sale to the general public.
- Temporary structures necessary and incidental to any construction activity.
- Utility facilities necessary for the provision of public services and pollution control facilities associated with site use.
- Other industrial uses not listed above, subject to prior review and approval.

The following uses are expressly prohibited.

- Temporary or permanent residential use.
- Retail sale of products not manufactured or handled at wholesale by the owner or lessee.
- Wreck, junk, or commercial waste processing; salvage yards; or similar activities (except as incidental and integral to permitted uses).
- Any other purpose other than such as may be expressly approved by IPDA.

The Bagrami Industrial Park is located in a very dry area. The nearest surface water is the Logar River, which is roughly 6.5 kilometers away. Flood plains are not a concern. Historically, floods have occurred infrequently, with last unofficial record suggesting that it has been 20-30 years since the last occurrence. There are no wetlands on the site.

The potential for damaging flash floods requires a flood control strategy. As a precaution, engineers will study the need for constructing a floodway. Curbside accommodation is incorporated in the design. A planned storm water drainage pond will provide additional control.

Sanitary wastewaters will be discharged to the soil by septic tank adsorption field systems. Engineers adhering to best engineering practices will design the septic system for the proposed industrial park project.

The exteriors of buildings to be located in the park shall incorporate structural arrangements and color schemes that will limit visual discord with the natural background.

Nighttime lighting for the industrial park and buildings located in it shall incorporate features for limiting in the increase in brightness of the nighttime sky.

The front, rear, and sides of all buildings shall be visually screened from adjacent parcels and off-site property, using methods such as architectural fencing, berms, and plantings, individually or in combination.

Noise levels in areas of the industrial park used for office buildings shall not exceed an Ldn of 75 dBA, and in areas to be used for wholesale, industrial, manufacturing, and utilities shall not exceed an Ldn of 80 dBA. Further, noise generated in the industrial park shall not cause the Ldn at any nearby residence existing at the time of the land transfer to exceed 65 dBA.

All land disturbances shall be controlled using BMPs to mitigate erosion and sedimentation.

All construction in the proposed industrial park will comply with the seismic load design of the 2003 edition of the International Building Code (IBC), which establishes the minimum regulations for building systems using prescriptive and performance-related provisions. This is consistent with USAID requirements, which call on all building design in the Kabul area to comply with region 4 seismic standards. Further, landslide protection will be addressed through sound site development.

Should there be any inadvertent archaeological discoveries within the proposed site, IPDA shall be notified. IPDA shall determine appropriate measures to identify, evaluate, and treat these discoveries.

#### 5.0 CONSULTATION AND COORDINATION EFFORTS

Public participation and interagency coordination/review are part of the NEPA process during the preparation of an EA. Public and appropriate federal, state, and local agencies were invited to provide input during the scoping process and were provided a copy of the draft EA for review and comment. Section 5.1 describes the scooping process to determine the content of the EA, and Section 5.2 discusses the intergovernmental and public review of the draft EA.

# 5.1 Scoping

One activity in EA preparation is the description of what the evaluation will cover, that is, the scope of the EA. An important part of this "scoping" process is the solicitation of public participation in the determination of the issues to be evaluated and the inclusion of that information in the evaluation process. This section summarizes USAID's efforts to solicit comments that helped to define the content of the EA.

Local communities view this proposed project at an undeveloped site as a suitable site for an industrial and office park which would help remedy the area's economic problems. Local officials and an advisory committee have been involved from the beginning.

USAID formally began the NEPA process for this project by issuing a Notice of Intent (NOI) in the *Federal Register* on DATE. This NOI provided information about how comments could be submitted by e-mail, phone, and regular mail. It requested that comments on the project be submitted within 30 days from the NOI, which was through DATE.

Information from the NOI, along with maps showing the site and land being considered, were posted on USAID's Internet site on DATE, at SPECIFY WEB SITE URL. USAID will post a copy of this EA on this site.

The proposed project was discussed and commented on by several ministries in the government of Afghanistan. USAID contacted various national and provincial agencies notifying them of USAID's intent to prepare an EA for the proposed project and to request comments on the draft EA. These agencies included the ministries of Light Industry, Commerce, Electricity and Water, Finance and Foreign Affairs.

# 5.2 Lead and Cooperating Agencies

USAID is the lead agency in preparing this EA. No agencies requested or were invited to be cooperating agencies.

# **5.3 Distribution of the Draft Environmental Assessment**

This draft EA will be placed on USAID's Web site. Copies will be given to the following.

- Ministry of Light Industry
- Ministry of Commerce
- Ministry of Finance
- Ministry of Foreign Affairs
- Ministry of Electricity and Water

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# 7.0 SUPPORTING INFORMATION

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# 7.2 Acronyms and Abbreviations

AISA BMP dB	Afghan Investment Support Agency Best Management Practice decibel
dВА	A-weighted decibel
EA	Environmental Assessment
EIS	Environmental Impact Statement
<b>FONSI</b>	Finding of No Significant Impact
GSHAP	Global Seismic Hazard Assessment Programme
IBC	International Building Code
IPDA	Industrial Parks Development Authority
IUCN	World Conservation Union
Ldn	Day-Night Average Sound Level
m3	cubic meter
MIWRE	Ministry of Irrigation, Water Resources and Environment
Ng/m3	nanograms per cubic meter
NEPA	National Environmental Policy Act
NOI	Notice of Intent
PAHs	Polyaromatic Hydrocarbons
PBT	persistent, bioaccumulate, and toxic
UN	United Nations
UNEP	United Nations Environment Programme
UNHCR	United Nations High Commissioner for Refugees
USAID	U.S. Agency for International Development
WHO	World Health Organization